REMARKS

The Official Action mailed May 4, 2005, has been received and its contents carefully noted. This response is filed within three months of the mailing date of the Official Action and therefore is believed to be timely without extension of time. Accordingly, the Applicant respectfully submits that this response is being timely filed.

The Applicant notes with appreciation the consideration of the Information Disclosure Statement filed on May 25, 2005. A further Information Disclosure Statement is submitted herewith and consideration of this Information Disclosure Statement is respectfully requested.

Claims 25-200 were pending in the present application prior to the above amendment. Claims 25, 27, 33, 35, 43, 49 and 51 have been amended to better recite the features of the present invention, and new claims 201-212 have been added to recite additional protection to which the Applicant is entitled. The Applicant notes with appreciation the allowance of claims 29-32, 37-42, 45-48, 53-56, 80, 89, 116, 125, 134, 152, 161, 188 and 197 (Office Action Summary, of the "Disposition of Claims" and "Allowable Subject Matter" at page 3 of the Official Action). Claims 57-61, 63-70, 79-79, 81-88, 90-97, 99-106, 108-115, 117-124, 126-133, 135-142, 144-151, 153-160, 162-169, 171-178, 180-187, 189-196 and 198-200 have been withdrawn from consideration by the Examiner. Accordingly, claims 25-56, 62, 71, 80, 89, 98, 107, 116, 125, 134, 143, 152, 161, 170, 179, 188, 197 and 201-212 are currently elected, of which claims 25, 27, 29, 31, 33, 35, 37, 39, 41, 43, 45, 47, 49, 51, 53 and 55 are independent. For the reasons set forth in detail below, all claims are believed to be in condition for allowance. Favorable reconsideration is requested.

It appears that the Official Action contains a typographical error at page 2, paragraph 2, in that claims 29-32, 37-42, 45-48, 53-56, 80, 89, 116, 125, 134, 152, 161, 188 and 197 are included in the rejection. However, based on the "Disposition of Claims" and "Allowable Subject Matter" portions of the Official Action, it appears that claims 29-32, 37-42, 45-48, 53-56, 80, 89, 116, 125, 134, 152, 161, 188 and 197 are in

condition for allowance and that the inclusion of these claims in the rejection is in error. Therefore, it is understood that the rejection only applies to claims 25-28, 33-36, 43, 44, 49-52, 62, 71, 98, 107, 143, 170 and 179.

Paragraph 2 of the Official Action rejects claims 25-28, 33-36, 43, 44, 49-52, 62, 71, 98, 107, 143, 170 and 179 as obvious based on the combination of U.S. Patent No. 6,594,446 to Camm et al., U.S. Patent No. 5,219,786 to Noguchi and U.S. Patent No. 6,461,439 to Granneman et al. The Applicant respectfully submits that a *prima facie* case of obviousness cannot be maintained against the independent claims of the present application, as amended.

As stated in MPEP §§ 2142-2143.01, to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. "The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art." In re Kotzab, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000). See also In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); In re Jones, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

The prior art, either alone or in combination, does not teach or suggest all the features of the independent claims, as amended.

Conventional RTA methods require an increase in heating temperature instead of shortening a heating time. Therefore, in order to obtain desired effects in activation and gettering processes, conventional RTA methods conduct heat treatment at a temperature that is at or higher than a strain point of glass and, in some cases, at or higher than a softening point of glass (see page 3, line 25, to page 4, line 5 of the present specification). For example, a glass substrate is curved and deformed by its dead weight when subjected to heat treatment at 800°C for 60 seconds for the purpose of gettering.

In order to overcome these problems with conventional RTA methods, one object of the present invention is to provide a method of manufacturing a semiconductor device (using a substrate with low resistance made of glass or the like) comprising heating a substrate by switching on/off a pulsed lamp light source in a short period of time without deforming a substrate.

Independent claims 25, 27, 33, 35, 43, 49 and 51 have been amended to better what are believed to be allowable features of the present invention. Specifically, claims 25 and 27 have been amended to recite "heating a substrate by switching on/off a pulsed lamp light source with a cycle of one second or longer," claim 33 to recite "heating the substrate disposed in the reaction tube by switching on/off a pulsed lamp light source with a cycle of one second or shorter," claim 35 to recite "performing a first heat treatment to the substrate disposed in the reaction tube by switching on/off a pulsed lamp light source with a cycle of one second or shorter; and performing a second heat treatment to the substrate by switching on/off the pulsed lamp light source," claim 43 to recite "heating the semiconductor film disposed in the reaction tube by switching on/off a pulsed lamp light source with a cycle of one second or longer," claim 49 to recite "heating the semiconductor film disposed in the reaction tube by switching on/off a pulsed lamp light source provided outside of the reaction tube with a cycle of one second or shorter" and claim 51 to recite "performing a first heat treatment to the semiconductor film disposed in the reaction tube by switching on/off a pulsed lamp light

source provided outside of the reaction tube with a cycle of one second or shorter; and performing a second heat treatment to the semiconductor film by switching on/off the pulsed lamp light source." Also, the claims have been amended to remove features which are not believed to be critical to the patentability of the claims.

Camm, Noguchi and Granneman, either alone or in combination, do not teach or suggest the above-referenced features of the present invention.

Since Camm, Noguchi and Granneman do not teach or suggest all the claim limitations, a *prima facie* case of obviousness cannot be maintained. Accordingly, reconsideration and withdrawal of the rejections under 35 U.S.C. § 103(a) are in order and respectfully requested.

New dependent claims 201-212 have been added to recite additional protection to which the Applicant is entitled. For the reasons stated above and already of record, the Applicant respectfully submits that new claims 201-212 are in condition for allowance.

Should the Examiner believe that anything further would be desirable to place this application in better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,

Eric J. Robinson
Reg. No. 38,285

Robinson Intellectual Property Law Office, P.C.
PMB 955
21010 Southbank Street
Potomac Falls, Virginia 20165
(571) 434-6789